

LEBANON NATIONAL AVIATION SAFETY PLAN (NASP)

SECTION 1. INTRODUCTION

1.1 Overview of the LEBANON NASP

Lebanon is committed to enhancing aviation safety and to the resourcing of supporting activities. The purpose of this national aviation safety plan (NASP) is to continually reduce fatalities, and the risk of fatalities, through the development and implementation of a national aviation safety strategy.

The NASP promotes the effective implementation of Lebanon's safety oversight system, a risk-based approach to managing safety, as well as a coordinated approach to collaboration between Lebanon and other States, regions, and industry.

In order to fast track NASP implementation and meeting GASP Goals, Lebanon and the European Union launched a Twinning Project (ENP1/2019/409-052) to support DGCA in the field of Safety and Security.

All stakeholders are encouraged to support and implement the NASP as the strategy for the continuous improvement of aviation safety.

The NASP of Lebanon is in alignment with the ICAO *Global Aviation Safety Plan* (GASP 2020-2022), Doc 10004, Doc 10131, ICAO Circular 358 and the RASP-MID plan.


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1.2 Structure of the NASP

This NASP presents the strategy for enhancing aviation safety for a period of five years. It is comprised of six sections. In addition to the introduction:

1. The purpose of the NASP;
2. Lebanon's strategic approach to managing aviation safety;
3. The national operational safety risks identified for the interval 2021-2025;
4. Other safety issues addressed in the NASP; and
5. A description of how the implementation of the safety enhancement initiatives (SEIs) listed in the NASP is going to be monitored.

1.3 Relationship between the NASP and the State safety programme (SSP)

Through an effective SSP, Lebanon identifies and mitigates national operational safety risks. The SSP provides safety information to the NASP. The SSP allows Lebanon to manage its aviation activities in a coherent and proactive manner by:

1. Measuring the safety performance of its civil aviation system;
2. Monitoring the implementation of the NASP's SEIs and address any identified hazards and deficiencies.

The NASP is one of the key documents produced as part of Lebanon's SSP documentation. It is the means by which Lebanon defines and drives the implementation of SEIs generated by the SSP process and drawn from the ICAO GASP and the RASP-MID. It also allows Lebanon to determine initiatives to strengthen the SSP or otherwise needed to achieve its safety objectives. Safety intelligence gathered through the SSP also contributes to other national plans, such as the air navigation plan. Further information on Lebanon's SSP can be found at <https://www.dgca.gov.lb/index.php/en/rr-manual-en>

1.4 Responsibility for the NASP development, implementation, and monitoring

The Directorate General of Civil Aviation (DGCA) is responsible for the development, implementation and monitoring of the NASP, in collaboration with the Ministry of Transportation and the national aviation industry. The NASP is in alignment with the 2020-2022 edition of the GASP and the RASP-MID.

1.5 National safety issues, goals, and targets

The NASP addresses the following national safety issues:

- a) Controlled Flight Into Terrain (CFIT);
- b) Loss of Control In-Flight (LOC-I);
- c) Runway Excursion (RE);
- d) Runway Incursion (RI);
- e) Bird Strikes; and
- f) The lack of aircraft accident and incident investigation capabilities at the national level.

To address the issues listed above and enhance aviation safety at the national level, the five-year NASP contains the following goals and targets:

- 1) Maintain a decreasing trend of accident rates;
- 2) Achieve a continuous reduction of operational safety risks and target;
- 3) Awareness impact on organizational safety culture;
- 4) Enhance policies & procedures on the effectiveness of safety risk controls.

1.6 Operational Context

The current operational context of Lebanon

- 1) One certified international aerodrome in Lebanon, (the airspace of Lebanon is classified into three Classes, Class A - Beirut ACC >FL200, Class B - Beirut ATZ Surface to 300ft and Class C - CTR, Surface to 4000ft;
- 1) 208,739 aircraft movements in Lebanon over the period of the past four years (2018-2021);
- 2) Five Air Operator Certificates (AOCs) were issued by Lebanon, to operators conducting international commercial air transport operations;
- 3) Lebanon also has one FTO, operating domestic flight training services, primarily on light piston engine aircraft;
- 4) Lebanon has one ATO (Simulator and Ground School FFS A320/A320neo & A330);
- 5) There are no commercial or private helicopter operators or heliport in Lebanon.

Common challenges in Lebanon include *socio-political, economic, and financial issues with human factor magnitude*.

SECTION 2. PURPOSE OF LEBANON'S NATIONAL AVIATION SAFETY PLAN

The NASP is the master planning document containing the strategic direction of Lebanon for the management of aviation safety for a period of five years (2021-2025). This plan lists national safety issues, sets national aviation safety goals and targets, and presents a series of safety enhancement initiatives (SEIs) to address identified safety deficiencies and achieve the national safety goals and targets.

Lebanon's NASP master plan addresses all aspects of air transport at national-level with the objective of providing a clear and comprehensive planning and implementation strategy for the future development of the entire civil aviation sector. The NASP contains in-depth information specific to aviation safety aspects.

The NASP has been developed using international safety goals and targets and HRCs from both the GASP (www.icao.int/gasp) and RASP-MID.

The SEIs listed in the NASP support the improvement of safety at the wider regional and international levels and include several actions to address specific operational safety risks and recommended SEIs set out in the RASP-MID.

SECTION 3. LEBANON'S STRATEGIC APPROACH TO MANAGING AVIATION SAFETY

The NASP presents the SEIs derived from the SSP, including Lebanon's safety risk management process and safety data collection and processing systems, as well as the work undertaken by service providers in the development and implementation of their safety management systems (SMS). This plan is developed and maintained by DGCA, in coordination with all stakeholders and is updated at least every two years.

The NASP includes the following national safety goals and targets, for the management of aviation safety, as well as a series of indicators to monitor the progress made towards their achievement. They are tied to the goals, targets and indicators listed in the GASP and the RASP-MID.

Goal	Target	Indicators	Link to GASP and RASP-MID
1. Achieve a continuous reduction of operational safety risks	Maintain a decreasing trend of the national accident rate.	1.1-Zero accidents occurring in the State per 10 000 departures. 1.2-Zero accidents occurring in the State to aircraft over 5 700 kg involved in scheduled commercial operations.	This goal is directly linked to Goal 1 and Target 1.1 of the GASP and linked to Goal 1 and Target 1.1 of the RASP-MID.
2. Strengthen the State's safety oversight capabilities	By 2026, reach an effective implementation score of 85%.	2.1-58.40% Overall EI score. 2.2-57.30% priority PQs implemented nationally. 2.3-37.00% completed corrective Action	This goal is directly linked to Goal 2 and Target 2.1 of the GASP and linked to Goal 2 and Target 2.1 of the RASP-MID.
3- Enhance the State safety programmes (SSPs)	By 2022, reach 95% Level of maturity in Annex 19 PQs,		This goal is directly linked to Goal 3 and target 3.2 of the GASP and Target 3.2 of RASP-MID
4- Increase collaboration at the regional level	By 2022, to contribute information on safety risks, including SSP safety performance indicators (SPIs), to regional aviation safety group (RASGs)		This goal is directly linked to Goal 4 and target 4.2 of the GASP and Target 4.2 of RASP-MID

The SEIs in this plan are implemented through Lebanon's existing safety oversight capabilities and the service providers' SMS. SEIs derived from the ICAO global aviation safety roadmap were identified to achieve the national safety goals and targets presented in the NASP. Some of the national SEIs are linked to overarching SEIs at the regional and international levels and help to enhance aviation safety globally. The full list of the SEIs is presented in the appendix to the NASP.

The NASP also addresses emerging issues. Emerging issues include concepts of operations, technologies, public policies, business models or ideas that might impact safety in the future, for which insufficient data exists to complete typical data-driven analysis. It is important that Lebanon remain vigilant on emerging issues to identify potential operational safety risks, collect relevant data and proactively develop mitigations to address them. The NASP addresses the following emerging issues,

The Human Factor effect of the country's Eco-Political situation on the aviation community (Stakeholders and Authorities alike), requiring the identification of safety-related challenges by intensifying:

- 1) Safety reporting;
- 2) Continuing airworthiness reporting;
- 3) Operational performance monitoring;
- 4) Inspections;
- 5) Audits;
- 6) Surveys;
- 7) Safety studies and reviews.

SECTION 4. NATIONAL OPERATIONAL SAFETY RISKS

The NASP includes SEIs that address national operational safety risks, derived from lessons learned from operational occurrences and from a data-driven approach. These SEI may include actions such as: rule-making; policy development; targeted safety oversight activities; safety data analysis; and safety promotion. Separate sections are provided to address commercial air transport and general aviation to make the information more accessible to stakeholders (if applicable to the State).

Lebanon maintains an Annual Safety Record of accidents and serious incidents involving commercial air transport and general aviation aircraft:

- 1) All aircraft occurrences in Lebanon; and
- 2) Lebanese registered aircraft occurrences abroad, as shown in the table below.

Year	Fatal accidents	Non-fatal accidents	Serious incidents
Commercial air transport occurrences in Lebanon			
10-year average (2010-2020)	0	0	2
2021	0	0	0
General aviation aircraft occurrences in Lebanon			
10-year average (2010-2020)	1	0	0
2021	0	0	0

The following National High-Risk Categories of occurrences (HRCs) in the Lebanon context were considered of the utmost priority because of the number of fatalities and risk of fatalities associated with such events. They were identified based on analyses from mandatory and voluntary reporting systems, accident and incident investigation reports, safety oversight activities over the past two years, the SSP, as well as on the basis of regional analysis conducted by RASG-MID, and on the operational safety risks described in the GASP. These HRCs are in line with those listed in the 2020-2022 edition of the GASP, as well as the RASP-MID:

1. Controlled Flight Into Terrain (CFIT);
2. Loss of Control In-Flight (LOC-I);
3. Mid-Air Collision (MAC);
4. Runway Excursion (RE); and
5. Runway Incursion (RI).

In addition to the national operational safety risks listed above, the following additional categories of operational safety risks have been identified:

- 1) Bird Strike;
- 2) FOD;
- 3) Loss of Power at take-off;
- 4) Anti-Ice application adequacy at low temperature.

To address the national operational safety risks listed above, Lebanon identified the following contributing factors leading to HRCs and will implement a series of SEIs, some of which are derived from the ICAO OPS roadmap, contained in the GASP:

HRC 1: Controlled Flight Into Terrain (CFIT):

- 1) Weather (for Single piston engine aircraft used by FTOs which are not equipped with WR);
- 2) No warning will be given when a prompt warning is required, GPWS Defect or Not equipped, (in the case of Single piston engine aircraft used by FTOs which are not equipped with GPWS);
- 3) Inadequate standard operating procedures for effective flight management;
- 4) CFIT & ALAR training programme.

HRC 2: Loss of control in-flight (LOC-I):

- 1) Aeroplane systems-induced;
- 2) Environmentally induced;
- 3) Pilot/human-induced;
- 4) Training practices, lack of upset prevention and recovery training requirements for flight crew members;
- 5) Inadequate standard operating procedures for effective flight management.

HRC 3: Runway Excursion (RE):

- 1) Aircraft landing off-centre, long, floated or bounced;
- 2) Crew loss of control of the aircraft while on ground;
- 3) Weak regulatory oversight, poor airport facilities, contaminated runway or poor breaking action;
- 4) Meteorology threats.

HRC 4: Runway Incursion (RI):

- 1) Aerodrome complexity and variations from standard;
- 2) Inappropriate, unreadable or lack of airfield signs, markings or lights;
- 3) Communications, including:
 - a. Ambiguous and/or misunderstood transmissions
 - b. Traffic and radio congestion
- 4) Human factors, including:
 - a. Physiological factors (e.g. Fatigue)
 - b. Distraction
 - c. Complacency

HRC 5: Mid-air Collision:

- 1) Loss of separation between aircraft;
- 2) Traffic conditions;
- 3) Air traffic controller workload;
- 4) Requirements for aircraft equipment; traffic alert and collision avoidance system/airborne collision avoidance system (TCAS/ACAS);
- 5) Flight crew training.

SECTION 5. OTHER SAFETY ISSUES

In addition to the national operational safety risks listed in the NASP, Lebanon has identified other safety issues and initiatives selected for the NASP. These are given priority in the NASP since they are aimed at enhancing and strengthening Lebanon's safety oversight capabilities and the management of aviation safety at the national level.

The eight critical elements (CEs) of a safety oversight system are defined by ICAO. Lebanon is committed to the effective implementation of these eight CEs, as part of its overall safety oversight responsibilities, which emphasize Lebanon's commitment to safety in respect of its aviation activities.

The eight CEs are presented in the figure below.



Figure 1. Critical Elements of a Sate's Safety Oversight System

The latest ICAO activities, which aim to measure the effective implementation of the eight CEs of Lebanon's safety oversight system, as part of the ICAO Universal Safety Oversight Audit Programme (USOAP), have resulted in the following scores:

Overall EI score							
58.40%							
EI score by CE							
CE-1	CE-2	CE-3	CE-4	CE-5	CE-6	CE-7	CE-8
85.71%	64.94%	26.32%	25.00%	70.19%	69.66%	50.54%	43.59%
EI score by audit area5							
LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
66.67%	33.33%	53.66%	57.89%	80.00%	55.56%	39.25%	63.96%

SECTION 6. MONITORING IMPLEMENTATION

Lebanon will continuously monitor the implementation of the SEIs listed in the NASP and measure safety performance of the national civil aviation system, to ensure the intended results are achieved, using the mechanisms presented in the appendix to this plan.

In addition to the above, Lebanon will review the NASP every two years or earlier, if required, to keep the identified operational safety risks, safety issues and selected SEIs updated and relevant. The DGCA will periodically review the safety performance of the initiatives listed in the NASP to ensure the achievement of national safety goals and targets.

Lebanon gained the support of the EU and ENAC to ensure the timely implementation of SEIs to address safety deficiencies and mitigate risks. Through close monitoring of the SEIs, Lebanon will make adjustments to the NASP and its initiatives, if needed, and update the NASP accordingly.

Lebanon will use the indicators listed in Section 3 of this plan to measure safety performance of the civil aviation system and monitor each national safety target. A periodic bi-annual safety report will be published to provide stakeholders with relevant up-to-date information on the progress made in achieving the national safety goals and targets, as well as the implementation status of the SEIs.

In the event that the national safety goals and targets are not met, the root causes will be presented. If Lebanon identifies critical operational safety risks, reasonable measures will be taken to mitigate them as soon as practicable, possibly leading to an unscheduled revision of the NASP.

Lebanon adopted a standardized approach to provide information at the regional level, for reporting to the RASGs that will allow the region to receive information and assess operational safety risks using common methodologies.

Any questions regarding the NASP and its initiatives, and further requests for information may be addressed to:

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APPENDIX TO THE NASP

Safety enhancement initiative SEI	Action	Timeline	Responsible entity	Stakeholders	Metrics /Indicators		Priority	Monitoring Activity
Goal 1: Achieve a continuous reduction of operational safety risks								
Target 1.1: Maintain a decreasing trend of the national accident rate								
No Reported Accident/Incident								
Goal 2: Strengthen States' safety oversight capabilities								
Target 2.1: Improve the score for the EI of CEs with focus on priority PQs								
2.1.1 Overall EI score of 85%	EU Twinning Project	Jan 2019-Dec2022	DGCA/FSD	DGCA	85% EI		High	DGCA/FSD
2.1.2 100% implementation of priority PQs	EU Twinning Project	Jan 2019-Dec2022	DGCA/FSD	DGCA	100% PQs		High	DGCA/FSD
2.1.3 Timely updating the filing of differences	EU Twinning Project	Jan 2019-Dec2022	DGCA/FSD	DGCA	100%		High	DGCA/FSD
2.1.4 Submit the corrective action plans (CAPs) using OLF)	EU Twinning Project	Jan 2019-Dec2022	DGCA/FSD	DGCA	100% CAP		High	DGCA/FSD
Goal 3: Implement effective State safety programmes (SSPs)								
Lebanon Implement an effective SSP								
Goal 4: Increase collaboration at the regional level								
Target 4.1 Lebanon is using a twinning project to strengthen the safety oversight capabilities	EU Twinning Project	Jan 2019-Dec2022	DGCA/FSD	DGCA	100% CAP		High	DGCA/ENAC
Target 4.2: to contribute information on safety risks & SSP safety performance indicators (SPIs), to RASGs	Improve Coordination with Regional office on safety matters	Jan 2019-Dec2022	DGCA/FSD	ICAO MID Office	100% Collaboration		Medium	DGCA/NAC
Goal 5: Expand the use of industry programmes								
Target 5.1 Number of service providers using harmonized metrics for their SPIs	Assist Service Providers to implement Harmonized Metrics for their SPIs.	Jan 2022-Dec 2022	DGCA/FSD	DGCA AOC GH FTO/ATO AMO	100% Collaboration		Medium	DGCA/FSD
Target 5.2 Number of service providers participating in the corresponding ICAO-recognized industry assessment programmes	Assist Service Providers to participate in the ICAO Industry Assessment Programme.	Jan 2022-Dec 2022	DGCA/FSD	DGCA AOC GH FTO/ATO AMO	100% Collaboration		Medium	DGCA/FSD

Safety enhancement initiative SEI	Action	Timeline	Responsible entity	Stakeholders	Metrics	Priority	Monitoring Activity
Goal 6: Expand the use of industry programmes							
Target 6.1 Ensure the appropriate infrastructure is available to support safe operations	Enhance infrastructure in DGCA and with Service providers to support safe operation	Jan 2022- Dec 2022	DGCA/FSD	DGCA AOC GH FTO/ATO AMO	100% Collaboration	Medium	DGCA/FSD
Target 6.1 Implement the air navigation and airport core infrastructure	Implement the air navigation and airport core infrastructure	Jan 2022- Dec 2022	DGCA/FSD	DGCA AOC GH FTO/ATO AMO	100% Collaboration	Medium	DGCA/FSD